REMARKS

This is a full and timely response to the Office Action mailed February 22, 2008, submitted concurrently with a two month extension of time to extend the due date for response to July 22, 2008.

By this Amendment, claims 1-5 have been amended to put the claims in better form under U.S. practice. Further, claim 6 has been amended in preparation of possible rejoinder upon the allowance of claims 1-5. Lastly, new claim 7 has been added to combine the limitations of claims 4 and 5. Thus, no claim has been canceled in this Amendment, and claims 1-7 are currently pending in this application with claim 6 being withdrawn. Support for the claim amendments and new claim can be readily found variously throughout the specification and the original claims.

In view of these amendments, Applicant believes that all pending claims are in condition for allowance. Reexamination and reconsideration in light of the above amendments and the following remarks is respectfully requested.

Rejection under 35 U.S.C. §112

Claims 1-5 are rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. Applicant believes that this rejection has been overcome by the amendment of the claims to define "*HDD*" as "*hard disk drive*" based on the teachings on page 1 lines 11-12, of the specification. Thus, withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. §102 and §103

Claims 1-3 and 5 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Shimose et al. (U.S. Patent No. 6,203,918). Further, claim 4 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Shimose et al. (U.S. Patent No. 6,203,918) in view of Manos (U.S. Patent No. 5,084,345). Applicant respectfully traverses these rejections.

To constitute anticipation of the claimed invention under U.S. practice, the prior art reference must literally or inherently teach each and every limitation of the claims. Further, to establish a *prima facie* case of obviousness, the cited reference(s) must teach or suggest the invention as a whole, including all the limitations of the claims. Here, in this case, none of the cited

references, either alone or in combination, teach or suggest all of the limitations of the claims with particular emphasis on the limitations "*a tensile strength of 400 MPa or more, and a conductance of 65% or more*".

The Examiner has argued that the limitations "*a tensile strength of 400 MPa or more, and a conductance of 65% or more*" are inherently taught since the same materials are used in Shimose et al. However, Applicant disagrees with the Examiner in this regard.

To establish that the copper foil or copper alloy foil of Shimose et al. inherently possesses the tensile strength of the present invention, the Examiner **must provide a basis in fact and/or technical reasoning** to reasonably support the determination that the claimed tensile strength (i.e. 400 MPa or more) <u>necessarily flows from the teachings</u> of Shimose et al. Under U.S. practice, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). Applicant notes that it is disclosed in the specification that the tensile strength of the copper foil or copper alloy foil is not fixed by its composition. Instead, it is subject to change by the processing of the copper foil or copper alloy foil. As noted on page 6, lines 6-7, and page 7, lines 11-12, of the specification, the tensile strength of the electrodeposited copper foil tends to deteriorate upon heating during the hot pressing process with the polyimide/stainless steel layer. Thus, it cannot be argued that Shimose et al. inherently teaches the tensile strength of the present invention since Shimose et al. does not account for the variability of the tensile strength due to heating.

In further support of such arguments, Applicant has also submitted herewith a Rule 1.132 Declaration clearly establishing that the copper foils disclosed in Shimose et al. does not possess "*a tensile strength of 400 MPa or more, and a conductance of 65% or more*"

Shimose et al. (U.S. Patent No. 6,203,918) is a patent also owned by the Assignee of the present application, and Mr. Yuji Matsusita is one of the Shimose et al. inventors. Mr. Yuji Matsusita is also a co-researcher with the inventors of the present application. Therefore, Mr. Yuji Matsusita has great knowledge and understanding of both the Shimose et al. patent and the invention of the present application. Mr. Yuji Matsushita has prepared a Declaration regarding the copper foils that were used in the Examples of Shimose et al.

In Shimose et al., two kinds of copper foils were used in the Examples. An electrolytic copper foil product (CF-T9) with a thickness of 9 µm from Fukuda Metal Foil and Powder Co., Ltd. was used in Examples 1-3, 5, 7-9, and Comparative Examples 1-3. An 18 µm-thick copper alloy foil product (C7025 TM-03) from Olin Somers Corp. was used in Example 4 and 6.

As discussed in the Declaration, Mr. Yuji Matsusita obtained catalogues from Fukuda Metal Foil and Powder Co. Ltd. and Olin Somers Corp., and confirmed the tensile strength and conductance of the copper foils products used in Shimose et al. The results are as follows:

CF-T9 : Tensile strength of 350MPa (at 23°C) and 180MPa (at 180°C)

TM-03 : Tensile Strength of 70-88kgf/mm

Conductance of 35% IACS Min. @ 68°F

As the product CF-T9 is an electrolytic copper foil, conductance is high but tensile strength is low. Also, as product TM-03 is a metal rolling copper foil, tensile strength is high but conductance is low. That is to say, each of the copper foil products from Fukuda Metal Foil and Powder Co. Ltd. and Olin Somers Corp. only satisfies one of the claimed requirements of the present claims (*tensile strength* or *conductance*) but do not satisfy both of them. Since the copper foil products of Shimose et al. do not satisfy both the tensile strength and conductance requirements of the claims, the problem discussed in the specification of the present application will occur.

The present specification discloses on page 2, line 17, to page 3, line 8, the problems associated with the laminates of Shimose et al. and the differences between the laminates of Shimose et al. and that of the present invention. Please note that WO 98/08216 is the international patent publication of the reference Shimose et al. and thus, the differences with the laminates of Shimose et al. and that of the present invention are clearly set forth in the specification of this application. Applicant has reiterated herein below the relevant passage relating to WO 98/08216 for the Examiner's convenience.

> *In WO98/08216 is disclosed a laminate for HDD suspension prepared by successively forming a polyimide resin layer and a conductor layer on a stainless steel substrate. This document contains a description specifying the linear expansion coefficient of the polyimide resin layer and the adhesive strength between the polyimide resin layer and the conductor layer for laminates suitable for HDD suspension. However, it is becoming increasingly difficult for the technology herein disclosed alone to exercise impedance control to cope with higher capacity and greater data transmission rate of HDDs or with finer wiring in*

> *the future. For example, a laminate comprising a 9 μm-thick copper foil is described in the aforementioned WO98/08216; this copper foil is an electrodeposited copper foil whose tensile strength is less than 400 MPa and a laminate suitable for high-performance HDD suspension was difficult to prepare with the use of this copper foil. On the other hand, laminates prepared with the use of copper foils of low resistance, high conductance and high strength have been proposed to increase the data transmission rate; however, the truth is that the technology for manufacturing higher-capacity HDDs requires miniaturization of a slider and the consequent reduction in flying height of a slider and the proposed laminates were not capable of satisfactorily controlling the spring characteristics necessary for execution of the technology.*

Thus, although the Examiner recognizes that the present invention is similar to Shimose et al., it is clear that there are differences in the tensile strength and conductance of the copper foils products used in Shimose et al. and that of the present invention. Such differences clearly could not have been disclosed in the prior art since the copper foil used in the laminate for HDD suspension that meets the requirements of the present claims was not known prior to the present application.

For example, Manos (U.S. Patent No. 5,084,345) has been cited by the Examiner to teach the rolled copper alloy foil of the present claims. However, Applicant submits that the rolled copper alloy foil of Manos also do not satisfy the requirements of the claims. In Manos, brass treated copper (commercially designated as ED copper) is used in Example 9. Even though this brass-treated copper cannot be identified since its product name is not clear, Applicant has confirmed that it is different from the conductor layer used in the present invention according to the following document regarding brass treated copper (see “Typical values” section of Elektrisola Inc, Brass-Copper Zinc Alloy-CuZn10 enclosed herewith).

The Elektrisola Inc document shows data regarding Brass's tensile strength and Resistance (IACS) which changes based on the amount of Zn contained therein. The document shows that the conductance (IACS) of Brass is around 40% or less. Therefore, brass-treated copper foil taught in Manos will not satisfy both the tensile strength and conductance requirements of the present claims. Hence, Applicant believes that one skilled in the art would not be able to arrive at the conduct layer in the present invention even if teachings of Shimose et al. are combined with the disclosure in Manos.

Lastly, even when these references are combined by a person skilled in the art, Applicant believes that the cited references, either alone or in combination, do not teach or suggest the superior features and advantages possessed by the invention of the present claims. The present invention reduces the thickness of a copper foil to facilitate control of the flying height of a slider thereby increasing the degree of freedom of spring characteristics required for suspension. The present invention also provides a substrate for HDD suspension which possesses a conductor layer of sufficient strength for forming a stable flying lead and is suitable for fabrication of fine wiring at a higher level. Such features and advantages of the present invention cannot be obtained without the limitations required by the claims (i.e. "*a tensile strength of 400 MPa or more and a conductance of 65% or more*".

In support, Applicant requests the Examiner to review the Examples of the specification and note the differences in effect when the tensile strength and conductance requirements of the claims are not satisfied. Based on the data shown in Table 1 of the specification, the superior effects of the claimed copper foil are clearly demonstrated by comparing the Examples vs. the Comparative Examples. In the present application, the copper foils used in the Examples are as follows.

(1) The copper foil used in Example 1 is a rolled copper alloy foil (NK-120) with a thickness of 12 μm available from Japan Energy Corporation.
(2) The copper foil used in Example 2 is a rolled copper alloy foil (NK-120) with a thickness of 8 μm available from Japan Energy Corporation.
(3) The copper foil used in Comparative Example 1 is a rolled copper alloy foil (C7025) with a thickness of 18 μm available from Olin.
(4) The copper foil used in Comparative Example 2 is a rolled copper alloy foil (NK-120) with a thickness of 18μm available from Japan Energy Corporation.
(5) The copper foil used in Comparative Example 3 is an electrodeposited copper foil (B WS) with a thickness of 12 μm available from Furukawa Circuit Foil Co., Ltd.

The copper foil used in Comparative Example 1 is low in conductance (47%) which is consistent with the conductance of ordinary rolled copper alloy foil. Also, although copper foil in Comparative Example 3 is high in conductance (100%), its tensile strength is low (332Mpa). As clearly shown in the Examples, the superior effect of the present invention can only be attained when copper foil having a tensile strength of 400 MPa or more and a conductance of 65% or more is used. Therefore, it is clear that the present invention provides superior technical advantages not expected based on the teachings and suggestions of the cited references. As the Examiner already knows, presence of a

property not possessed by the prior art is evidence of nonobviousness. *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963).

Thus, for these reasons, withdrawal of the present rejections is respectfully requested.

<u>Rejection under Obviousness-Type Double Patenting</u>

Claims 1-5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 2 of Okamura et al. (U.S. Patent No. 7,338,716, and U.S. Patent Application Publication No. 2004/0067349) in view of Shimose et al. (U.S. Patent No. 6,203,918). Applicant respectfully traverses this rejection.

Under U.S. case law, a double patenting rejection of the obviousness-type is "*analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. § 103*". *In re Braithwaite, 379 F.2d 594, 154 U.S.P.Q. 29 (CCPA 1967)*. Therefore, any analysis employed in an obviousness-type double patenting rejection parallels the guidelines for analysis of a 35 U.S.C. § 103. *In re Braat, 937 F.2d 589, 19 U.S.P.Q.2d 1289 (Fed. Cir. 1991)*.

Thus, to establish a *prima facie* case of obviousness, the combined teachings and suggestions of Okamura et al. (U.S. Patent No. 7,338,716, and U.S. Patent Application Publication No. 2004/0067349) and Shimose et al. (U.S. Patent No. 6,203,918) must teach or suggest the invention as a whole, including all the limitations of the claims.

Here, in this case, for the same reasons as presented above, Shimose et al. (U.S. Patent 6,203,918) fails to teach or suggest all of the claim limitations with particular emphasis on the limitations "*a tensile strength of 400 MPa or more and a conductance of 65% or more*". Hence, Applicant respectfully request that this rejection also be withdrawn.

CONCLUSION

For the foregoing reasons, all the claims now pending in the present application are believed to be clearly patentable over the outstanding rejections. Accordingly, favorable reconsideration of the claims in light of the above remarks is courteously solicited. If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

Dated: July 22, 2008

Respectfully submitted,

By:__________________________

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Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No. 50-4422 for any such fees; and applicant(s) hereby petition for any needed extension of time.

BRASS - COPPER ZINC ALLOY - CuZn10

General Description

ELEKTRISOLA brass wire CuZn10 consists of 90% copper and 10% zinc (C22000). This product has very good mechanical properties and corrosion behavior, comparable to that of copper. The low conductivity and the outstanding bending proof performance makes it the preferred choice for heating applications. Furthermore, bare wire is suitable for electric discharge removal of material (spark erosion). Copper zinc alloy wire is available in all insulation and self-bonding enamel types, as well as bare wire and litz wire.

Features

- Very good mechanical properties
- Outstanding bending proof performance
- Low conductivity

Applications

- Fuel injectors
- Resistance wires
- Heating applications
- Spark erosion
- Guitar strings
- Decoration / Fabrics
- Others

Typical values

		Cu	CuZn10	CuZn20	CuZn30	CuZn37
Tensile strength	[N/mm²]	220-270	340-390	390-450	440-540	430-480
Yield strength at 1% elongation	[N/mm²]	120-180	290-340	270-390	320-420	240-310
Bending proof performance	[%]	100	1400	1800	2700	2100
Resistance (IACS)	[%]	100	44	32	27	26
Conductivity	[S*m/mm²]	58.5	25.3	18.8	16	15
Resistivity	[Ohm*mm²/m]	0.0171	0.0395	0.0532	0.0625	0.067
Thermal coefficient of resistance	[1E-6/K]	3900-4000	1300-1500	1300-1500	1300-1500	1300-1500
Solderability	[-]	good	good	good	good	good

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- Resistance by diameter